IN THE CLAIMS

Please amend claims 1, 2, 16, 29, 30 and 37 as follows:

1. (Currently Amended) A method of fitting acquired fiducial data to a set of fiducials on a fiducial plate; said method comprising:

translating an imaging apparatus and the fiducial plate relative to each other in a plane parallel fashion ~~across a plane parallel to the fiducial plate~~ to capture image data ~~such that~~ having image features with an image feature center, the image features being positioned ~~of the image data is captured~~ at discrete locations with respect to the set of fiducials on ~~and positioned in space relative to~~ the fiducial plate;

mapping local frame fiducial coordinates to the image data captured by the imaging apparatus by at least in part calculating an absolute location for each captured image feature center relative to a corresponding fiducial on the fiducial plate in fiducial plate coordinates ~~fitting a fiducial grid model to the image data acquired by the imaging apparatus for each discrete location to identify image feature centers;~~

establishing a conversion from coordinates obtained from the image data to ideal fiducial coordinates using a data processing component, the establishing being based at least in part on the mapping of local frame fiducial coordinates to the image data and at least in part on estimating an inter-fiducial spacing of the image data using at least one of a predetermined fiducial pitch, a magnification of the imaging apparatus and a dimension of the image data ~~based on fitting the fiducial grid model for each discrete location~~;

employing a non-linear transformation to quantify at least one of independent scale factors in an X-Y plane, orthogonality errors in a camera pixel arrangement and a keystone distortion in the image data;

~~calculating an absolute location for each identified acquired image feature center relative to the fiducial plate in fiducial plate coordinates~~ wherein based on the conversion

using the data processing component, the absolute location indicating a distance measurement in fiducial plate coordinates; and

based on at least one calculated absolute location of the identified acquired image feature centers, selectively modifying a structure represented by the identified acquired image feature center.

2. (Currently Amended) The method of claim 1 wherein said ~~fitting~~ mapping comprises identifying fiducial coordinates for each fiducial captured in said image data acquired by said imaging apparatus.

3. (Original) The method of claim 2 further comprising selectively iterating said identifying coordinates for each fiducial and said calculating an absolute location of identified acquired image feature centers.

4. (Original) The method of claim 1 wherein said calculating comprises utilizing a linear least squares operation.

5. (Original) The method of claim 1 further comprising assuming that a rotation of said imaging apparatus relative to a fiducial grid is negligible.

6. (Original) The method of claim 1 wherein said imaging apparatus comprises a charge-coupled device camera.

7. (Original) The method of claim 1 wherein said imaging apparatus comprises a complementary metal-oxide semiconductor device.

8-15 (Cancelled)

16. (Currently Amended) A computer readable medium encoded with non-transitory data and instructions for fitting acquired fiducial data to a set of fiducials on a fiducial plate; said data and said instructions causing an apparatus executing said instructions to:

translate an imaging apparatus and the fiducial plate relative to each other in a plane parallel fashion ~~across a plane parallel to the fiducial plate~~ to capture image data ~~such that~~ having image features with an image feature center, the image features being positioned ~~of the image data is captured~~ at discrete locations with respect to the set of fiducials on ~~and positioned in space relative to~~ the fiducial plate;

map local frame fiducial coordinates to the image data captured by the imaging apparatus by at least in part calculating an absolute location for each captured image feature center relative to a corresponding fiducial on the fiducial plate in fiducial plate coordinates ~~fit a fiducial grid model to the image data acquired by the imaging apparatus for each discrete location to identify image feature centers~~;

establish a conversion from coordinates obtained from the image data of each identified fiducial to ideal plate coordinates, wherein the conversion is established based at least in part upon the map of local frame fiducial coordinates and at least in part on an estimate of an inter-fiducial spacing of the image data using at least one of a predetermined fiducial pitch, a magnification of the imaging apparatus and a dimension of the image date ~~based on fitting the fiducial grid model for each discrete location~~; and

employ a non-linear transformation to quantify at least one of independent scale factors in an X-Y plane, orthogonality errors in a camera pixel arrangement and a keystone distortion in the image data;

~~calculate an absolute location of each identified acquired image feature centers relative to the fiducial plate,~~ wherein the absolute location indicating a distance measurement in fiducial plate coordinates.

17. (Original) The computer readable medium of claim 16 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said

instructions to identify fiducial coordinates for each fiducial captured in said data acquired by said imaging apparatus.

18. (Original) The computer readable medium of claim 17 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions selectively to iterate identifying coordinates for each fiducial and calculating an absolute location of identified acquired image feature centers.

19. (Original) The computer readable medium of claim 16 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to utilize a linear least squares operation.

20. (Original) The computer readable medium of claim 16 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to assume that a rotation of said imaging apparatus relative to a fiducial grid is negligible.

21-28 (Cancelled)

29. (Currently Amended) A method of accurately identifying a location of a feature relative to a fiducial plate comprising:

acquiring an image data of an object with an imaging apparatus by translating the imaging apparatus ~~across a plane parallel to~~ and a fiducial plate relative to each other in a plane parallel fashion to capture the image data at discrete locations, the image data concerning the position of a plurality of fiducial marks on a fiducial plate and data concerning the position of a feature of the object, the image data being acquired such that the image data concerning the position of a plurality of fiducial marks on a fiducial plate and data concerning the position of a feature of

the object is obtained simultaneously, wherein the image data represent the fiducial marks as having a center;

mapping local frame fiducial coordinates to the image data captured by the imaging apparatus by at least in part calculating an absolute location for each captured fiducial mark center relative to a corresponding fiducial on the fiducial plate in fiducial plate coordinates;

~~fitting a fiducial grid model to the image data to~~ establishing a conversion from coordinates of the plurality of fiducial marks acquired from the image to coordinates of the plurality of fiducial marks on the fiducial plate using a data processing component, the establishing begin based at least in part on the mapping of local frame fiducial coordinates to the image data and at least in part on estimating an inter-fiducial spacing of the image data using at least one of a predetermined fiducial pitch, a magnification of the imaging apparatus and a dimension of the image data;

employing a non-linear transformation to quantify at least one of independent scale factors in an X-Y plane, orthogonality errors in a cameral pixel arrangement and a keystone distortion in the image data;

wherein ~~calculating an absolute location of a center of each of the plurality of fiducial marks in the acquired image relative to the fiducial plate in fiducial plate coordinates using the data processing component,~~ the absolute location indicating a distance measurement in fiducial plate coordinates; and

determining a position of a feature of the object in the ~~acquired~~ captured image and modifying the determined position based on at least one calculated absolute location of the plurality of fiducial marks in the acquired image.

30. (Currently Amended) The method of claim 29 wherein the ~~fitting~~ mapping comprises identifying fiducial mark coordinates for each fiducial mark captured in the image data acquired by the imaging apparatus.

31. (Previously Presented) The method of claim 30 further comprising selectively iterating the identifying coordinates for each fiducial mark and the calculating an absolute location of identified acquired image feature centers.

32. (Previously Presented) The method of claim 29 wherein the calculating comprises utilizing a linear least squares operation.

33. (Previously Presented) The method of claim 29 further comprising assuming that a rotation of the imaging apparatus relative to the fiducial plate is negligible.

34. (Previously Presented) The method of claim 29 wherein the imaging apparatus comprises a charge coupled device camera.

35. (Previously Presented) The method of claim 29 wherein the imaging apparatus comprises a complementary metal-oxide semiconductor device.

36. (Previously Presented) The method of claim 29 wherein the object is part of a semiconductor probe card.

37. (Currently Amended) A method of localizing an object, comprising:

acquiring an image data with an imaging apparatus by translating the imaging apparatus ~~across a plane parallel to~~ and a fiducial plate relative to each other in a plane parallel fashion to capture the image data ~~such that~~ having image features with an image feature center, the image features being positioned ~~of the image data is captured~~ at discrete locations with respect to corresponding fiducials on ~~and positioned in space relative to~~ the fiducial plate, wherein the discrete locations are less than or equal to half of a center-to-center fiducial spacing as measured on the fiducial plate, the image data including the object to be localized and a plurality of fiducial marks;

mapping local frame fiducial coordinates to the image data captured by the imaging apparatus by at least in part calculating an absolute location for each captured image feature center relative to a corresponding fiducial on the fiducial plate in fiducial plate coordinates ~~fitting a model to the plurality of fiducial marks that defines a transformation between a location of the plurality of fiducial marks as seen in the image data acquired during the translating of the imaging apparatus and an actual location of the plurality of fiducial marks~~;

determining an actual position of the object with respect to the plurality of fiducial marks using the model fitted to the image of the plurality of fiducial marks as the imaging apparatus is translated, including:

establishing a conversion from coordinates obtained from the image data to ideal fiducial coordinates based at least in part on the mapping of local frame fiducial coordinates to the image data and at least in part on estimating an inter-fiducial spacing of the image data using at least one of a predetermined fiducial pitch, a magnification of the imaging apparatus and a dimension of the image data,

employing a non-linear transformation to quantify at least one of independent scale factors in an X-Y plane, orthogonality errors in a camera pixel arrangement and a keystone distortion in the image data.

38. (Previously Presented) The method of claim 37 further comprising:

interposing a substantially transparent substrate having a plurality of fiducials formed therein between the imaging apparatus and the object.

39. (Previously Presented) The method of claim 37 further comprising:

acquiring a succession of images with an imaging apparatus, each of the succession of images including both the object and the plurality of fiducial marks.

40. (Original) The method of claim 1, wherein the image data includes object data and fiducial data.